

Appl. No. 10/799,898
Amendment dated September 15, 2006
Reply to Office Action mailed July 21, 2006

Amendments to the Drawings

In Figures 1D and 2B, please delete the reference numeral "28".

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REMARKS/ARGUMENTS

Claims 1-14, 17-21, 24, 34, 37-44, 47-48, and 51 are pending in this application and have not been withdrawn. Claims 1, 18, 34 and 44 are currently amended. Claims 25-33, 45-46 and 52-78 are withdrawn. Claims 15-16, 22-23, 34, 36 and 49-50 are cancelled.

OBJECTIONS TO THE DRAWINGS

The drawings are objected to under 37 CFR 1.84(p)(4). The amendments to the drawings and specification set forth above address and overcome this objection.

OBJECTIONS UNDER 35 USC 1.32(a)

The amendment filed 5/18/2006 is objected to under 35 USC 1.32(a) as introducing new matter. The amendments to the drawings and specification set forth above address and overcome this objection, including each of the items listed as A, B and C on page 6 of the Office Action.

CLAIM REJECTIONS UNDER 35 USC 112, SECOND PARAGRAPH

Claim 44 is rejected under 35 USC 112, second paragraph as being indefinite. Claim 44 has been amended and the rejection is overcome.

CLAIM REJECTIONS UNDER 35 USC 102

Claims 1, 8-14, 16-21, 24, 34, 35, 37-44, 47, 48 and 51 are rejected under 35 USC 102(b) as being anticipated by US patent no. 6,095,051 to Saxby. This rejection is respectfully traversed.

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Applicant's claim 1 recites a piston sleeve ... including one or more partially annular protrusion portions (hereinafter "cogs"); and a primary case ... including one or more complementary cogs to those of the piston sleeve. As understood, Saxby does not teach this feature. The Examiner is relying upon components 34 and 52 of Saxby's cartridge to meet the one or more partially annular protrusion portions or cogs 34 of Applicant's piston sleeve and the complementary cogs of Applicant's primary case, respectively. However, Saxby's components 34 and 52 are not **partially annular**. The components 34 and 52 illustrated at Saxby's Figure 2A are instead fully annular.

Axial coupling of Applicant's piston sleeve and primary case involves initially offsetting their respective cogs and compressing the cartridge together. Applicant's rotationally offset cogs slide past each other during axial coupling of his piston sleeve and primary case. Relative rotation of Applicant's sleeve and primary case after the compressing serves to overlap the respective cogs (e.g., in the view of Applicant's Figures 5B, 5C, 6B and 6C). Then, upon activation, the sleeve and primary case telescope apart such that the respective cogs of the piston sleeve and primary case ultimately meet.

Saxby's case 32 is apparently coupled by inserting the case 50 into the sleeve 32 and then crimping either the piston at reference numeral 34 of Saxby's Figure 2A or the case 32 at reference numeral 52. Otherwise, Saxby may couple the case 32 with the piston 50 by moving the case 32 to the left and moving the piston 50 to the right in the example of Figure 2A. If attempted in the opposite direction after crimping, Saxby's fully annular protrusions 34 and 52 will collide and not permit his piston 50 and case 32 to be coupled. Because Saxby's protrusions 34 and 52 are fully annular, there is no relative angular offset position that will permit coupling of Saxby's case 32 and piston 50 after crimping, i.e., Saxby's cartridge may not be assembled by moving his piston 50 to the left and his case 32 to the right in Figure 2A of the 6,095,051 patent after providing the both crimps 34 and 52. The two pieces 50 and 32 of Saxby also cannot be

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disassembled after crimping, e.g., for re-loading, such it is not clear how Saxby would remove the spent primer cartridge from the case 32.

Although claim 1 has been amended to add the language "partially annular" with regard to both the cogs of the sleeve and the cogs of the case, claim 1 previously recited that the coupling of the sleeve and the case is provided by offsetting the respective cogs followed by compression. It is not possible to offset cogs that are fully annular. It is therefore respectfully submitted that the insertion of the words "partially annular" merely clarifies the original meaning of claim 1 without narrowing it.

Therefore, Saxby's patent does not disclose each and every element of Applicant's claim 1, and Saxby's patent does not anticipate claim 1. Claims 8-14 and 17 are allowable as being dependent from claim 1. Claims 18 and 34 are allowable for the same reasons as claim 1. Claims 19-21 and 24 are allowable as being dependent from claim 18. Claim 35 has been cancelled. Claims 37-44, 48 and 51 are allowable as being dependent from claim 34.

CLAIM REJECTIONS UNDER 35 USC 103

Claims 1-14, 17-21, 24, 34-35, 37-44, 47-48 and 51 are rejected under 35 USC 103(a) as being unpatentable over Saxby in view of US patent no. 6,845,716 to Hussein et al. Saxby does not disclose all of the elements of Applicant's claim 1, as explained above. In addition, Saxby's cartridge has the disadvantageous, compared with Applicant's invention, that the two pieces that form his cartridge cannot be decoupled for reuse without untoward decrimping and recrimping of at least one of the pieces. Moreover, Hussein et al. also do not teach or suggest Applicant's partially annular protrusion portions. Instead, Hussein et al. teach a screw-like thread that continues around and around in a corkscrew shape. In this way, the threads of Hussein et al. are more than partially annular, and even more than fully annular, and are in fact multiply annular. In addition, cartridge components of Hussein et al. cannot telescope

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apart upon activation of the cartridge, because they are screwed together. Telescoping upon activation is a feature of Applicant's cartridge that facilitates a reduced projectile energy as compared with Hussein et al. That is, Applicant allocates some of the generated energy to the telescoping such that it is not available for contributing to the kinetic energy of the projectile. Moreover, the ability of the two component pieces of Applicant's telescoping cartridge to be readily decoupled and recoupled, especially without respectively decrimping and recrimping, as with the Saxby cartridge, provides tremendous advantage.

Applicant's two-piece cartridge design is advantageous for several reasons, but at least because it provides for reloading with ease of assembly and re-assembly. The two-pieces of Applicant's cartridge may be repeatedly coupled and de-coupled, due to the design of the cogs and channels of the piston sleeve and primary case. Moreover, this cartridge manipulation may be performed with human fingers.

One reason that the ability to decouple the two-pieces is important is because the flash hole 9 (see, e.g., element 40 of Applicant's Figures 1D and 2A) is very small in diameter, e.g., about 0.020". Without the ability accorded by Applicant's invention to de-couple the piston sleeve from the primary case, the flash hole is, however, the only accessible portal through which to insert a tool for punching a spent unit from front to aft. This is too small to drive a tool with sufficient strength through for pushing the spent propellant cartridge out of its cavity in the primary case. A spent unit is easily accessible for removal and replacement once a piston and case in accordance with Applicant's invention are separated.

A new propellant cartridge can be provided into its cavity within Applicant's primary case, even in the field, and the two-pieces reassembled for reuse. Saxby, on the other hand, discloses a two-piece assembly that cannot be separated and re-used without reversing the crimp (discussed above), which is itself difficult. Even upon doing so, reuse of Saxby's cartridge would involve re-crimping which cannot be easily performed, and may not be possible let alone

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practical, anywhere outside the factory. Absent easy decoupling of the two pieces in accordance with Applicant's invention, Saxby is left with trying to access the spent primer cartridge through the tiny flash hole, a difficult task indeed. As a tool that could fit through this tiny flash hole would lack sufficient strength to punch out the spent unit, in practice, Saxby's two-piece cartridges are merely single use followed by disposal, while the two-pieces of Applicant's invention may be reused time and again with ease of reassembly.

Another reason that the ability to decouple the two pieces of is advantageous is for cleaning. Pyrotechnic propellant units leave residue that has to be periodically cleaned if they are to be reused with reliable results. By separating the piston sleeve and primary case, the assembly may be readily cleaned.

Another advantage of Applicant's invention is that it permits an operator the option of readily changing piston sleeves to couple with a same primary case. This permits different cartridge length configurations for various ranges of cartridge applications. That is, piston sleeves of different lengths can be coupled and decoupled from a same primary case. In addition, cartridge lengths can be used to allow discrimination within conversion kits to ensure safe discharging. If a cartridge of the wrong length is inserted into a firearm, it will not fire. This is an important safety advantageous, particularly when a firearm may be presumed to be non-lethal or sub-lethal, and yet an operator attempts to load a lethal cartridge into the firearm. Discharge of the firearm in that instance could have dire consequences.

Applicant's invention also permits an operator to readily change disposable parts. For example, cartridge pieces may be part reusable and part disposable, i.e., only the piston sleeve or primary case may be configured to be reusable, while the other of the two pieces is designed to be disposed of after a single use or at least after fewer uses than its complement. The disposable pieces may be replaced with new pieces, and coupled with reusable counterpart components.

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The Examiner is urged to reconsider the rejection of this application in view of the above. Applicant and the undersigned attorney would be very happy to discuss the invention with the Examiner over the phone or in person at the Examiner's convenience.

The Commissioner is authorized to charge any deficiencies in fees and credit any overpayment of fees to Deposit Account No. 50-2019. A duplicate page is enclosed.

Respectfully submitted,

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Dated: September 15, 2006

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